CLAIMS

1. (WITHDRAWN) A holographic memory system comprising:

(a) a photorefractive crystal configured to store holograms;

(b) a single laser diode configured to emit a collimated laser beam to both write to and read from the photorefractice crystal; and

(c) one or more liquid crystal beam steering spatial light modulators (BSSLMs) configured to steer a reference beam, split from the collimated laser beam, at high speed to the photorefractive crystal.

2. (WITHDRAWN) The system of claim 1, wherein the one or more liquid crystal BSSLMs comprise two BSSLMs cascaded in an orthogonal configuration to form a two dimensional angular-fractal multiplexing scheme.

3. (WITHDRAWN) The system of claim 1, wherein the photorefractive crystal, single laser diode, and liquid crystal BSSLMs are implemented in a CD-sized holographic memory breadboard.

4. (WITHDRAWN) The system of claim 1, wherein the reference beam and an input beam, obtained from the collimated laser beam, create an interference pattern in the photorefractive crystal to record the hologram.

5. (WITHDRAWN) The system of claim 1, wherein the holographic memory system is configured for use with both analog and digital holograms.

6. (ORIGINAL) A holographic memory system comprising:

(a) a photorefractive crystal configured to store holograms;

(b) a single laser diode configured to emit a collimated laser beam to both write to and read from the photorefractice crystal; and

(c) one or more Micro-Electro-Mechanical Systems (MEMS) mirrors configured to steer a reference beam, split from the collimated laser beam, at high speed to the photorefractive crystal.

7. (ORIGINAL) The system of claim 6, wherein the one or more MEMS mirrors scans the reference beam along a horizontal plane in parallel with a C-axis.

8. (ORIGINAL) The system of claim 6, wherein the reference beam and an input beam, obtained from the collimated laser beam, create an interference pattern in the photorefractive crystal to record the hologram.

9. (ORIGINAL) The system of claim 6, wherein during writing to the photorefractive crystal, the MEMS mirror is varied by a small increment with respect to each new data page to specifically orient the reference beam to the photorefractive crystal in an angular multiplexing scheme.

10. (ORIGINAL) The system of claim 6, wherein the photorefractive crystal comprises Fe:$LiNbO_3$ photorefractive material.

11. (ORIGINAL) The system of claim 6, wherein the holographic memory system is configured for use with both analog and digital holograms.

12. (WITHDRAWN) A method for storing data in holographic memory comprising:

a single laser diode emitting a collimated laser beam for both writing a hologram to and reading the hologram from a photorefractive crystal;

splitting the collimated laser beam into a reference beam and an input beam;

one or more liquid crystal beam steering spatial light modulators (BSSLMs) steering the reference beam at high speed to the photorefractive crystal;

storing the hologram in the photorefractive crystal in a form of a interference pattern created by the steered reference beam and the input beam.

13. (WITHDRAWN) The method of claim 12, wherein the one or more liquid crystal BSSLMs comprise two BSSLMs cascaded in an orthogonal configuration to form a two dimensional angular-fractal multiplexing scheme.

14. (WITHDRAWN) The method of claim 12, wherein the photorefractive crystal, single laser diode, and liquid crystal BSSLMs are implemented in a CD-sized holographic memory breadboard.

15. (WITHDRAWN) The method of claim 12, wherein data may be stored in the hologram in either analog or digital form.

16. (ORIGINAL) A method for storing data in holographic memory comprising:

a single laser diode emitting a collimated laser beam for both writing a hologram to and reading the hologram from a photorefractive crystal;

splitting the collimated laser beam into a reference beam and an input beam;

one or more Micro-Electro-Mechanical Systems (MEMS) mirrors steering the reference beam at high speed to the photorefractive crystal; and

storing the hologram in the photorefractive crystal in a form of a interference pattern created by the steered reference beam and the input beam.

17. (ORIGINAL) The method of claim 16, wherein the one or more MEMS mirrors steers the reference beam by scanning the reference beam along a horizontal plane in parallel with a C-axis.

18. (ORIGINAL) The method of claim 16, wherein during writing to the photorefractive crystal, the MEMS mirror is varied by a small increment with respect to each new data page to specifically orient the reference beam to the photorefractive crystal in an angular multiplexing scheme.

19. (ORIGINAL) The method of claim 16, wherein the photorefractive crystal comprises Fe:$LiNbO_3$ photorefractive material.

20. (ORIGINAL) The method of claim 16, wherein data may be stored in the hologram in either analog or digital form.

21. (WITHDRAWN) An apparatus for storing data in holographic memory comprising:

means for storing a hologram;

means for emitting a collimated laser beam to both write to and read from the means for storing the hologram; and

one or more liquid crystal beam steering spatial light modulators (BSSLMs) configured to steer a reference beam, split from the collimated laser beam, at high speed to the means for storing the hologram.

22. (WITHDRAWN) The apparatus of claim 21, wherein the one or more liquid crystal BSSLMs comprise two BSSLMs cascaded in an orthogonal configuration to form a two dimensional angular-fractal multiplexing scheme.

23. (WITHDRAWN) The apparatus of claim 21, wherein the means for storing the hologram, means for emitting a collimated laser beam, and the one or more liquid crystal BSSLMs are implemented in a CD-sized holographic memory breadboard.

24. (WITHDRAWN) The apparatus of claim 21, wherein the reference beam and an input beam, obtained from the collimated laser beam, create an interference pattern in the means for storing the hologram to record the hologram.

25. (WITHDRAWN) The apparatus of claim 21, wherein the apparatus is configured for use with both analog and digital holograms.

26. (ORIGINAL) An apparatus for storing data in a holographic memory comprising:

means for storing a hologram;

means for emitting a collimated laser beam to both write to and read from the means for storing; and

one or more Micro-Electro-Mechanical Systems (MEMS) mirrors configured to steer a reference beam, split from the collimated laser beam, at high speed to the means for storing.

27. (ORIGINAL) The apparatus of claim 26, wherein the one or more MEMS mirrors scans the reference beam along a horizontal plane in parallel with a C-axis.

28. (ORIGINAL) The apparatus of claim 26, wherein the reference beam and an input beam, obtained from the collimated laser beam, create an interference pattern in the means for storing to record the hologram.

29. (ORIGINAL) The apparatus of claim 26, wherein during writing to the means for storing, the MEMS mirror is varied by a small increment with respect to each new data page to specifically orient the reference beam to the means for storing in an angular multiplexing scheme.

30. (ORIGINAL) The apparatus of claim 26, wherein the means for storing comprises Fe:$LiNbO_3$ photorefractive material.

31. (ORIGINAL) The apparatus of claim 26, wherein the apparatus is configured for use with both analog and digital holograms.